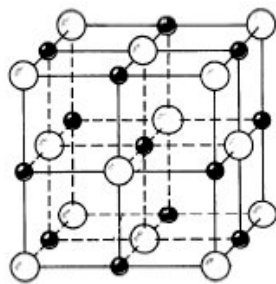
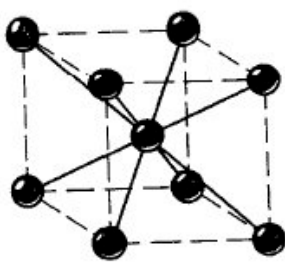
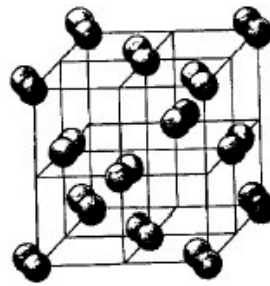


## T04D06 – IB Practice for Topic 04

Name.....

1. The diagrams below represent the structures of iodine, sodium and sodium iodide.

**A****B****C**

- (a) (i) Identify which of the structures (**A**, **B** and **C**) correspond to iodine, sodium and sodium iodide.

**(1)**

- (ii) State the type of bonding in each structure.

**(3)**

- (b) (i) Sodium and sodium iodide can both conduct electricity when molten, but only sodium can conduct electricity when solid. Explain this difference in conductivity in terms of the structures of sodium and sodium iodide.

**(4)**

- (ii) Explain the high volatility of iodine compared to sodium and sodium iodide.

**(2)****(Total 10 marks)**

2. (i) Draw Lewis (electron dot) structures for  $\text{CO}_2$  and  $\text{H}_2\text{S}$  showing all valence electrons.

**(2)**

- (ii) State the shape of each molecule and explain your answer in terms of VSEPR theory.  
 $\text{CO}_2$

 $\text{H}_2\text{S}$ **(4)**

- (iii) State and explain whether each molecule is polar or non-polar.

(2)

(Total 8 marks)

3. The elements sodium, aluminium, silicon, phosphorus and sulfur are in period 3 of the periodic table. Describe the metallic bonding present in aluminium and explain why aluminium has a higher melting point than sodium.

(Total 3 marks)

4. State **two** physical properties associated with metals and explain them at the atomic level.

(Total 4 marks)